

Trail Design Standards to Protect Trees and Riparian Habitat

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Summary

Trail design standards are needed to prevent occurrences of trails, authorized or not, that are too close to creeks, over exposed tree roots, not maintained, or compact and erode the soil. Design standards are also essential to design, construct, and maintain multi-use trails, in order to assure the safe use of trails. For long-term sustainability, design standards should also specify trail restoration and maintenance goals, which define strategies and prescriptions for trail closure, stabilization, revegetation, and monitoring and evaluation (NPS 2007).

PARD does not have trail design standards containing specified and enforceable conditions. Though the PARD Planning Department landscape architects attempt to minimize tree impacts, these still occur. Adverse impacts associated with trails are prevalent in popular parklands such as the Barton Creek Greenbelt and Emma Long Metropolitan Park.

The need for trail design standards is now critical to protect trees and streams, due to the ongoing emphasis on building many multi-use trails (non-motorized) for connectivity throughout Austin. However, trail standards with specified conditions have not been officially promulgated by the city. Work on the Urban Trail Master Plan will begin in May of this year, to be led by the Public Works Connectivity Division (Chad Crager, Annick Beaudet) and including PARD landscape architects specializing in trail design. As proposed, the plan may include guidelines, but will not include design standards with specific conditions.

Standards are especially important for streamside trails, since essentially all streams in Austin are now considered for bicycle and pedestrian connectivity greenways, where 12-foot wide concrete paths are built in urban areas. Current city planning also includes multi-use trail widths of 10 and 6-8 feet, respectively, in suburban and rural areas. These widths and other trail guidelines are referenced in the PARD Long Term Master plan, Chapter 8, Greenways and Parks Trails Plan.

Despite the city's focus on constructing multi-use and other trails, and related infrastructure, within riparian corridors throughout Austin, stream setbacks in the current city code do not apply to trails. The new Watershed Protection Ordinance (WPO) now being considered does include a 100-foot buffer from the creek to any development including trails (excluding downtown), but it will probably not be approved until July or later next year. However, despite the fact that multi-use trails are generally constructed of impervious concrete up to 12-14 feet wide, such trails do not count as impervious cover in the new draft WPO.

McFarlin (2009) compiled a comprehensive review of publications addressing the impact of public trails on urban streams and wildlife. The literature review indicates that buffer areas separating public trails from streams should vary according to land use. For example, when nearby development and roads adversely impact one side of a stream, a wider undisturbed habitat buffer should be specified along the other side of the stream.

A review of riparian buffer widths (Miller and Hobbs 2000) found that recreational trails and human activity affect nesting success and habitat use by certain species. For example, bird predators attacked more nests near trails than away from trails. Based on numerous citations that examine various streamside buffer widths, McFarlin (2009) recommends a 100-foot buffer between the trail and the stream as the minimum to protect water quality and aquatic habitat. However, a 300-foot buffer on both sides of the stream (600 feet total) is necessary to protect adjacent terrestrial wildlife habitat (Wenger 1999).

Trail Design Recommendations:

1. Specify official city standards for the design, construction, and maintenance of multi-use and other trails, in order to avoid impacts to trees and habitats.
2. To protect trees and adjacent habitat, promulgate design standards that specify trail restoration and maintenance goals, including strategies and prescriptions for trail closure, stabilization, revegetation, and monitoring and evaluation.

3. To the maximum extent possible, include minimal stream-to-trail buffers of 100 feet from the stream edge.
4. Minimize stream crossings and access points along trails to prevent unauthorized access up and down the stream. This is necessary to avoid destruction of vegetation, erosion of stream banks, and soil compaction.
5. Design stream crossings and access points to prevent damage to adjacent habitats, including the stream bed and stream banks.
6. Design stream crossings that are sustainable and do not impede high flows during floods.
7. Design trails to avoid the full critical root zone of trees whenever possible.
8. Include trails in impervious cover restrictions, and strictly limit total impervious cover to no more than 50 % within the critical root zones of protected and heritage trees.
9. If located within the critical root zone of a protected or heritage tree, build concrete trails above grade (no trenching, no root cutting) without compacting the soil. Build any such trail a distance of at least five times the diameter at DBH from a tree trunk.

References:

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